



(1 of 2)

PTO/SB/08A (10-01)

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Substitute Form 1449A/PTO

## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 1 of 6

### Complete if Known

Application Number	10/687,830
Filing Date	October 20, 2003
First Named Inventor	Louis B. Rosenberg
Art Unit	2635
Examiner Name	Unassigned
Attorney Docket Number	IMMR-084/04US

U.S. PATENT DOCUMENTS					
Examiner	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number Kind Code <sup>2</sup> (if known)			
A		6,422,941	7/23/2002	Thomer et al.	
		6,160,489	12/12/2000	Perry et al.	
		6,111,577	8/29/2000	Zilles et al.	
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		5,575,761	11/19/1996	Hajianpour	
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		4,794,392	12/27/1988	Selinko	
		4,713,007	12/15/1987	Alban	
		4,708,656	11/24/1987	De Vries et al.	

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*alt*

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Sheet **2** of **6****Complete if Known**

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		4,513,235	4/23/1985	Acklam et al.	
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<b>B</b>		2,972,140	2/14/1961	Hirsch	

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		Country Code <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)			
<b>A</b>		EP	0349086		1/3/1990	Stork Kwant B.V.	
		JP	H2-185278		7/19/1990	Taito Corporation	
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		JP	H7-24147		1/27/1995	Sega Corporation	
<b>B</b>		JP	H5-192449		8/3/1993	Taito Corporation	

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		First Named Inventor	Louis B. Rosenberg
		Art Unit	2635
		Examiner Name	Unassigned
		Attorney Docket Number	IMMR-084/04US
Sheet	3	of	6

OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS		
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
BS		BAIGRIE, "Electric Control Loading - A Low Cost, High Performance Alternative," <i>Proceedings of Interservice/Industry Training Systems Conference</i> , pp. 247-254, November 6-8, 1990.
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		RUSSO, "Controlling Dissipative Magnetic Particle Brakes in Force Reflective Devices," DSC-Vol. 42, <i>Advances in Robotics</i> , pp. 63-70, ASME 1992.

Examiner Signature	<i>allt</i>	Date Considered	12/21/04
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		Filing Date	October 20, 2003
		First Named Inventor	Louis B. Rosenberg
		Art Unit	2635
		Examiner Name	Unassigned
Sheet 4 of 6	Attorney Docket Number	IMMR-084/04US	

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Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
[Signature]		KONTARINIS et al., "Display of High-Frequency Tactile Information to Teleoperators," <i>Telemanipulator Technology and Space Telerobotics</i> , Won S. Kim, Editor, Proc. SPIE Vol. 2057, pp. 40-50, Sep. 7-9, 1993.
		PATRICK et al., "Design and Testing of A Non-reactive, Fingertip, Tactile Display for Interaction with Remote Environments," <i>Cooperative Intelligent Robotics in Space</i> , Rui J. deFigueiredo et al., Editor, Proc. SPIE Vol. 1387, pp. 215-222, 1990.
		ADELSTEIN, "A Virtual Environment System For The Study of Human Arm Tremor," <i>Ph.D. Dissertation</i> , Dept. of Mechanical Engineering, MIT, June 1989, archived 3/13/90.
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[Signature]		RABINOWITZ et al., "Multidimensional tactile displays: Identification of vibratory intensity, frequency, and contactor area," <i>Journal of The Acoustical Society of America</i> , Vol. 82, No. 4, October 1987.

Examiner Signature	[Signature]	Date Considered	12/21/04
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		Filing Date	October 20, 2003
		First Named Inventor	Louis B. Rosenberg
		Art Unit	2635
		Examiner Name	Unassigned
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B		BEJCZY et al., "Kinesthetic Coupling Between Operator and Remote Manipulator," <i>International Computer Technology Conference, The American Society of Mechanical Engineers</i> , San Francisco, CA, August 12-15, 1980.
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		KONTARINIS et al., "Tactile Display of Vibratory Information in Teleoperation and Virtual Environments," <i>PRESENCE</i> , 4(4):387-402, Harvard Univ., 1995.
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	G	
		GOBEL et al., "Tactile Feedback Applied to Computer Mice," <i>International Journal of Human-Computer Interaction</i> , Vol. 7, No. 1, pp. 1-24, 1995.

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A		PIMENTEL et al., "Virtual Reality: through the new looking glass," 2 <sup>nd</sup> Edition; McGraw-Hill, ISBN 0-07-050167-X, pp. 41-202, 1994.	
		"Cyberman Technical Specification," Logitech Cyberman SWIFT Supplement to Logitech Mouse Technical Reference and Programming Guide, 4/5/1994.	
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		NOLL, "Man-Machine Tactile," <i>SID Journal</i> , July/August 1972 Issue.	
B		ROSENBERG, "Virtual Fixtures: Perceptual Overlays Enhance Operator Performance In Telepresence Tasks," <i>Ph.D. Dissertation</i> , Stanford University, June 1994.	

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		3,903,614	09-1975	Diamond et al.	
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		4,930,770	06-1990	Baker	

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<sup>2</sup> Applicant's unique citation designation number (optional). <sup>3</sup> Kind Codes of U.S. Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>4</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>5</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>6</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>7</sup> Applicant is to place a check mark here if English language Translation is attached.

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Sheet **2** of **11****Complete if Known**

Application Number	10/687,830
Filing Date	October 20, 2003
First Named Inventor	Louis B. Rosenberg
Art Unit	2635
Examiner Name	Unassigned
Attorney Docket Number	IMMR-084/04US

**U.S. PATENT DOCUMENTS**

Examiner	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number Kind Code <sup>2</sup> (if known)			
A		4,934,694	06-1990	McIntosh	
		4,935,728	06-1990	Kley	
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**INFORMATION DISCLOSURE  
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Sheet **3** of **11****Complete if Known**

Application Number	10/687,830
Filing Date	October 20, 2003
First Named Inventor	Louis B. Rosenberg
Art Unit	2635
Examiner Name	Unassigned
Attorney Docket Number	IMMR-084/04US

U.S. PATENT DOCUMENTS					
Examiner	Cite No. <sup>1</sup>	Document Number		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
		Number	Kind Code <sup>2</sup> (if known)		
A		5,275,174		01-1994	Cook
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STATEMENT BY APPLICANT**

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Sheet **4** of **11****Complete if Known**

Application Number	10/687,830
Filing Date	October 20, 2003
First Named Inventor	Louis B. Rosenberg
Art Unit	2635
Examiner Name	Unassigned
Attorney Docket Number	IMMR-084/04US

**U.S. PATENT DOCUMENTS**

Examiner	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number Kind Code <sup>2</sup> (if known)			
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STATEMENT BY APPLICANT**

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Sheet **5** of **11****Complete if Known**

Application Number	10/687,830
Filing Date	October 20, 2003
First Named Inventor	Louis B. Rosenberg
Art Unit	2635
Examiner Name	Unassigned
Attorney Docket Number	IMMR-084/04US

**U.S. PATENT DOCUMENTS**

Examiner	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number Kind Code <sup>2</sup> (if known)			
R		5,844,392	12-1998	Peurach et al.	
		5,889,670	03-1999	Schuler et al.	
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Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Country Code <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)			
R		EP	0626634	A2			
		WO	95/02233				
		WO	95/20787				
		WO	95/20788				
		WO	95/32459				
		WO	96/16397				
		WO	95/22591				
		WO	96/42078				
		WO	97/12357				
		WO	97/19440				
		WO	97/21160				
		EP	0349086	A1			

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Sheet 6

of 11

**Complete if Known**

Application Number	10/687,830
Filing Date	October 20, 2003
First Named Inventor	Louis B. Rosenberg
Art Unit	2635
Examiner Name	Unassigned
Attorney Docket Number	IMMR-084/04US

**OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS**

Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
A3		"The Personal Digitizer™," Immersion Human Interface Corporation 1994.
		Adachi, Yoshitaka et al., "Sensory Evaluation of Virtual Haptic Push-Buttons," Technical Research Center, Suzuki Motor Corporation, Nov. 1994.
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**INFORMATION DISCLOSURE  
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Sheet **7** of **11****Complete if Known**

Application Number	10/687,830
Filing Date	October 20, 2003
First Named Inventor	Louis B. Rosenberg
Art Unit	2635
Examiner Name	Unassigned
Attorney Docket Number	IMMR-084/04US

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<i>Am</i>		Burdea et al., "Distributed Virtual Force Feedback, Lecture Notes for Workshop on Force Display in Virtual Environments and its Application to Robotic Teleoperation," 1993 IEEE International Conference on Robotics and Automation, pp. 25-44, May 2, 1993.
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Examiner Signature	<i>AMR</i>	Date Considered	12/4/04
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Sheet 8 of 11

**Complete if Known**

Application Number	10/687,830
Filing Date	October 20, 2003
First Named Inventor	Louis B. Rosenberg
Art Unit	2635
Examiner Name	Unassigned
Attorney Docket Number	IMMR-084/04US

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<i>h</i>		IBM Technical Disclosure Bulletin, "Mouse Ball-Actuating Device with Force and Tactile Feedback," vol. 32, No. 9B, Feb. 1990.
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Substitute for form 1449A/PTO		<b>Complete if Known</b>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (use as many sheets as necessary)		Application Number	10/687,830
		Filing Date	October 20, 2003
		First Named Inventor	Louis B. Rosenberg
		Art Unit	2635
		Examiner Name	Unassigned
		Attorney Docket Number	IMMR-084/04US
Sheet	9	of	11

OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS			
Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	
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Sheet 10 of 11

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